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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,168	03/17/2004	Yoshiteru Tsuchinaga	FUJY 21.045	4144

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EXAMINER	
HAN, QI	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
09/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,168	TSUCHINAGA ET AL.	
	Examiner	Art Unit	
	QI HAN	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *11-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

2. This application contains claims 11-20 drawn to an invention nonelected without traverse in the reply filed on 11/08/2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Response to Amendment

4. This communication is responsive to the applicant's amendment dated 06/24/2008. The applicant(s) amended claims 1-10 (see the amendment: pages 2-6).

The examiner withdraws the disclosure objection, because the applicant amended the corresponding contents in the specification.

Response to Arguments

5. Applicant's arguments filed on 06/24/2008 with respect to the claim rejection under 35 USC 102/103, have been fully considered but are moot in view of the new ground(s) of rejection, since the amended claims introduce new issue, which change the scope of the claims. The response to the applicant's arguments based on the newly amended claims (see Remarks: pages 13-14), is directed to the new ground rejection (see below).

Claim Objections

6. Claims 1-3, 5-7 and 10 are objected to because of the following:

Regarding claims 1, 3, 5, 6, 8 and 10, the term "LSP" should be spelled out in the claim. Appropriate correction is required.

Further, for claims 1, 2, 5-7 and 10, the claims include a limitation term "...should be...", which is not positive term in the claim language. Appropriate correction is required.

In addition, regarding claim 1, the limitation "an embedding judgment unit, every speech code, to judge…" appears to be grammatically or logically incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. Claims 1, 3, 5-6, 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by GOPALAN et al. (US 2003/0176934 A1) hereinafter referenced as GOPALAN in view of WU et al. ("Fragile speech watermarking based on exponential

scale quantization for temper detection", Acoustics, Speech , and Signal Processing, 2002, Proceeding IEEE international conference) hereinafter referenced as WU.

As per **claim 1**, GOPALAN discloses 'method and apparatus for embedding data in audio signals' (title), for 'Linear Predictive Code (LPC)-10 model (speech encoding/decoding method including coding/decoding speech code)' (p(paragraph) 25), comprising:

"an embedding judgment unit, (for) every speech code, to judge whether or not data should be embedded in the speech code based on a plurality of parameter codes constituting the speech code output from a [code excited] linear prediction encoder, the plurality of parameter codes including [an LSP code], a pitch lag code, [a fixed code and a gain code]" (Fig. 1 and p12, mechanism for 'computing the masker frequencies and their power levels on frame-to-frame (corresponding to every speech code) basis; determining (judge) a global threshold of hearing at each said masker frequency... obtaining the sound pressure level for quiet, below which a signal is inaudible (to judge whether or not data should be embedded in the speech code)'; p25, 'Linear Predictive Code (LPC)-10 model (inherently including pitch code as one of parameters)'; also see Fig. 1, '155', p22); and

"an embedding unit to embed data should be embedded in two or more parameter codes, defined as embedding object parameter codes, among a plurality of parameter codes constituting the speech code for which it is judged by the embedding judgment unit that the data should be embedded, wherein the embedding object parameter codes include a part of [the LSP code,] the pitch lag code [and the fixed code], and the embedding unit replaces the embedding object parameter codes with the data should be embedded", (p10,

a mechanism for 'embedding binary data (embedding data) in audio signal', 'the magnitude (parameter coder corresponding to embedding object parameter codes) of the power spectrum at the perceptual holes of each frame of a host speech utterance' and 'phase spectrum (parameter code) at perceptually masked spectral points of each frame of a host speech utterance', 'may be altered (replaced) so as to embed digital data'; p25, 'Linear Predictive Code (LPC)-10 model', 'DCT' and Fourier-Bessel coefficients (each of them corresponds a parameter code), may be used for embedding', which read on claimed parameter codes constituting the speech code; also see Fig. 1, p23 and p26-p27).

GOPALAN does not expressly disclose "a code excited linear prediction (CELP) encoder" having "an LSP code", "a fixed code" and "a gain code". However, the feature of embedding data in CELP encoders is well known in the art as evidenced by WU who discloses algorithms of embedding watermark data in certain regions, such as selected frequency components and/or compression coefficients, including portion of coefficients of CELP coders, such as 'LSP coefficients and the lag of pitch' among all coefficients of G.327.1 (page 3306, right column, p1-p3). One of ordinary skill in the art would have readily recognized that CELP (or G.327.1) coder (encoder) would have also inherently include fixed code and gain code among its parameter codes, and portions of these CELP parameter codes (such as LSP coefficients, pitch lag, fixed code and gain code) would be used for embedding data including but not limited in watermark data, because embedding different data in different parameter codes would be based on the same/common principle that would preserve both perceptively high quality on embedded data (such as speech) and high integrity on embedding data (such as watermarks). Further, one of ordinary skill in the art would have recognized that the CELP coder of WU (page 3306, right

column, p2) is later developed version of Linear Predictive Code (LPC) coder of GOPALAN (p25), and both parameters of power amplitude spectrum in GOPALAN and LSP coefficients in WU would reflect the same acoustic characteristic of speech (i.e. vocal track characteristic), so that combination of teachings of GOPALAN and LSP would be obviously within the capability/knowledge of the ordinary skilled person, and the result would be predictable when using the CELP coder instead of LPC-10 coder and using LSP coefficients instead of amplitude of power spectrum (or Fourier-Bessel coefficients, GOPALAN: p25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify GOPALAN by providing embedding data by using CELP coder with its parameters (such as portion of LSP, pitch, gain code, fixed code), as taught/suggested by WU, for the purpose (motivation) of providing transparent authentication with performing content preserving operation and/or using suitable (such as stable) coefficients for embedding data applications (WU: abstract; page 3306, right column, p2).

As per **claim 3**, it recites a data extraction device that simply performs the reversed operations of claim 1. The rejection is based on the same reason described for claim 1, because it also reads on the limitations of claim 3 (see GOPALAN: Fig. 1, '200-220').

As per **claim 5**, it recites a data embedding/extraction device. The rejection is based on the same reason described for claims 1 and 3, because the claim recites the same or similar limitation(s) as claims 1 and 3.

As per **claims 6, 8 and 10**, they recite methods. The rejection is based on the same reason(s) described for apparatus claims 1, 3 and 5 respectively, because the

method claims and apparatus claims are related as apparatus and method of using same, with each claimed element's function corresponding to the claimed method step.

8. Claims 2, 4, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over GOPALAN in view of WU applied to claims 1, 3 and 6, and further in view of CHIU et al. (US 2004/0220803 A1) hereinafter referenced as CHIU.

As per **claim 2** (depending on claim 1), GOPALAN in view of WU does not expressly disclose "the embedding judgment unit, for every frame defined in accordance with the speech encoding method, judges whether the frame is a frame of a **speech** section, or a frame of a **non-speech** section, and the embedding unit executes a process for **embedding data** in a speech code of the frame judged to be the frame of a **non-speech** section". However, the feature is well known in the art as evidenced by CHIU who discloses 'method and apparatus for transferring data over a voice channel' (title), comprising 'encoding (embedding) data traffic as a transmit voice frame' (abstract and p11-p12), 'detect silence (non-speech section)' and 'insertion of a voice frame with data (embedding data in a speech code) and the predetermined vocoder parameter' (p28), 'voice frames with data encoded (embedded) that have been inserted in area where silence or no voice frame (frame of non-speech section) was detected (p32 and Fig. 4), 'LPC vocoder (speech encoding method)' (p35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify GOPALAN in view of WU by providing using silence speech frame for encoding (embedding) data, as taught by CHIU, for the purpose (motivation) of transferring data

over a voice channel and embedding data in a voice channel without affecting legacy units or infrastructure equipment (CHIU: p3 and p12).

As per **claim 4** (depending on claim 3), it simply performs the reversed operations of claim 2. The rejection is based on the same reason described for claim 2, because it also reads on the limitation(s) of claim 4.

As per **claims 7** (depending claim on 6) and **9** (depending on claim 8), the rejection is based on the same reason described for apparatus claims 2 and 4 respectively, because the claims recite the same or similar limitations as claims 2 and 4 respectively.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Effective January 14, 2005, except correspondence for Maintenance Fee payments, Deposit Account Replenishments (see 1.25(c)(4)), and Licensing and Review (see 37 CFR 5.1(c) and 5.2(c)), please address correspondence to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, etc.) as follows:

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Alexandria , VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QI HAN whose telephone number is (571)272-7604. The examiner can normally be reached on M-TH:9:00-17:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QH/qh
September 8, 2008
/Qi Han/
Examiner, Art Unit 2626